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Patents ADP number *(if you know it)*	06166441002.		
If the applicant is a corporate body, give the country/state of its incorporation	United Kingdom		
4. Title of the invention	ORGANIC LIGHT-EMISSIVE DEVICES		
5. Name of your agent *(if you have one)*			
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Patents ADP number *(if you know it)*	1255003 ✓		
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26/03/99

ORGANIC LIGHT-EMISSIVE DEVICES

This invention relates to organic light-emissive devices (OLEDs), in particular organic light-emissive devices having patterned electrodes.

Organic light-emissive devices (OLED's) such as described in our earlier US-A-5, 247, 190 or in Van Slyke et al.'s US-A-4, 539, 507 have great potential for use as monochrome and multi-colour displays. OLED's based on semiconductive conjugated polymers are described in our earlier US-A-5, 247, 190, the contents of which are incorporated herein by reference. Principally, an OLED consists of an anode which injects positive charge carriers, a cathode which injects negative charge carriers and at least one organic electroluminescent layer sandwiched between the two electrodes. Typically, the thickness of the at least one organic layer is of the order of 100 nm and the electrical conductivity of the material of the at least one organic layer is sufficiently low as to avoid current spread from the overlap area between the cathode and the anode. Thus, light emission from the at least one organic layer occurs only where the cathode and the anode overlap and therefore pixelation and patterning is achieved simply by patterning the electrodes. High resolution is readily achieved and is principally limited only by the overlap area of the cathode and the anode and thus by the size of the cathode and the anode. Dot-matrix displays are commonly fabricated by arranging the cathode and the anode as perpendicular arrays of rows and columns, with the at least one organic layer being disposed therebetween.

Low resolution dot-matrix displays can, for example, be fabricated by coating at least one organic electroluminescent layer onto a substrate having thereon an array of indium-tin oxide (ITO) lines which act as an anode. A cathode comprising an array of lines perpendicular to those of the anode is provided on the other side of the at least one organic layer. These cathode lines may, for example, be lines of aluminium or an aluminium-based alloy which can be evaporated or sputtered through a physical shadow mask. However, shadow masking may not be desirable for various reasons. In particular, there are significant constraints on the use of shadow masks when displays of large area and/or high resolution are required. In

order to produce such electrode line arrays and other patterns of large area and/or high resolution one would normally have to use various forms of lithography.

In order to fabricate efficient and stable OLED's with the desired electrical and light output characteristics great care must normally be taken in the design and construction of the interfaces between any organic layer and the electrodes. The particular importance of these interfaces is due to the fact that charge carriers should be injected efficiently from the electrodes into the at least one organic layer.

Maintaining the desired electrical and light output characteristic of the pixels in an OLED display when lithographic processes are used to fabricate the electrode patterns, in particular where those patterns are on top of the at least one organic layer, is not trivial owing to the risk of the lithographic processes modifying and potentially damaging the organic layer/electrode interfaces and the vicinity. Such damage during lithography may originate from the photoresist, the developers, the etching processes (both dry and wet, negative and positive techniques and etch and lift-off) or the solvents used. It should be mentioned here that conjugated polymers are often deposited from and are generally soluble in organic solvents.

Plasma etching/ashing is very often used in lithography to remove the photoresist or residual photoresist which may not have been washed off the developer. Organic electroluminescent and charge transporting materials would normally be damaged, modified and/or etched very rapidly in such dry etching/ashing processes if directly exposed to the plasma.

One method of protecting the organic electroluminescent and charge transporting materials from the effects of the electrode patterning processes is disclosed in WO97/42666 in which a thin barrier layer composed of a dielectric material is interposed between the conductive electrode layer and the layer of light-emissive organic material.

The inventors of the present invention have identified the requirement for an improved construction which allows for the use of various lithographic processes

to form the electrode on top of at least one organic layer without significantly changing the electrical and light output characteristics of the display, and which meets todays demands for increased efficiency, reliability and durability.

It is a basic aim of the present invention to provide a device which meets the above-described requirements.

According to a first aspect of the present invention there is provided an organic light-emissive device comprising a light-emissive organic region interposed between first and second electrodes for injecting charge carriers into the light-emissive organic region, at least one of said first and second electrodes comprising:

a high-resistance first electrode layer adjacent the surface of the light-emissive organic region remote from the other of the first and second electrodes, said first electrode layer covering substantially the entire area of the surface of the light-emissive organic region remote from the other of the first and second electrodes and comprising a high-resistance material selected from the group consisting of a mixture of a semiconductor material with an insulator material, a mixture of a semiconductor material with a conductor material and a mixture of an insulator material with a conductor material; and

a patterned conductive second electrode layer adjacent the surface of the first electrode layer remote from the light-emissive organic region.

The first electrode layer is, as described above, formed over substantially the entire surface of the light-emissive organic region. In other words, the first electrode layer is formed over at least that area of the surface of the light-emissive organic region corresponding to the area occupied by the second electrode layer as defined by the laterally outermost edges of the patterned second electrode layer.

The term "patterned electrode layer" refers to a plurality of electrode elements which are only connected via the underlying high resistance first electrode layer. The pattered electrode layer preferably comprises an ordered array of separate elements such as a series of parallel rows or columns which are only connected via the underlying high resistance first electrode layer.

The resistance of the first electrode layer is determined such that it is sufficiently high to prevent significant current leakage between elements of the patterned second electrode layer, but is not so high as to significantly increase the voltage required to operate the device.

The use of a material comprising a physical blend of an insulator material and a semiconductor material, or a physical blend of a semiconductor material and a conductor material or a physical blend of a conductor material and an insulator material as the barrier layer has the significant advantage that the resistivity of the layer can be readily adjusted in accordance with the requirements of the individual device by appropriately varying the relative proportion of each material in the blend.

The high resistance first electrode layer is preferably composed of a physical blend of a conductor and an insulator or semiconductor, preferably a physical blend of a conductor and an insulator, since the increased conductivity of the blend realised by the inclusion of a conductor material means that the thickness of the high-resistance first electrode layer can be increased without causing a significant increase in the voltage required to operate the device. This ability to substantially increase the thickness not only provides the possibility to enhance the protection of the underlying organic layer or layers from the effects of etching/ashing processes but also provides the means to compensate for the adverse effects of any defects (such as particles of contamination or pinholes) which inevitably exist in the underlying organic film even with the high degree of cleanliness provided by the modern clean room. For example, covering any such defects substantially reduces the existence of undesirable low-resistance pathways within the device, thereby improving the performance of the device. A barrier layer of increased thickness also provides increased protection of the underlying organic layer against the ingress of reactive ambient species such as moisture and oxygen which can react with the organic material resulting in black spots.

Suitable semiconductor materials include, but are not limited to, Ge, Si, α-Sn, Se, ZnSe, ZnS, GaAs, GaP, CdS, CdSe, MnS, MnSe, PbS, ZnO, SnO, TiO_2, TiO_2, MnO_2 and SiC.

Suitable insulator materials include, but are not limited to, oxides, nitrides and halides such as fluorides. The insulator material is preferably selected from the group consisting of Al_2O_3, SiO_2, LiO, AlN, SiN, LiF and CsF.

Suitable conductor materials include, but are not limited to, metals, preferably Al or Ag.

According to an embodiment of the present invention, the first electrode layer forms the cathode of the device and comprises at least one material comprising an element having a low work function (preferably 3.7eV or less, and further preferably 3.0eV or less) such as Li , Ca or Cs whereby the electron injecting performance of the electrode is enhanced. Electrode layers comprising a material including Li or Ca are particularly preferred.

The first electrode layer is preferably comprised of a mixture selected from the group consisting of LiF/Al, Ca/Ge, Li/Si, Ca/ZnO, LiF/ZnSe and CsF/ZnS.

According to an alternative embodiment, the first electrode layer forms the anode of the device and comprises at least one material including an element having a high work function (preferably greater than 4.5eV and further preferably greater than 5.0eV) whereby the hole injecting performance of the electrode is enhanced. In this alternative embodiment, it is preferred that the first electrode layer comprises a material selected from the group consisting of Au, Pd, Ag and indium-tin oxide (ITO).

The first electrode layer preferably has a thickness in the range of 0.5 to 1.0 microns, and is composed of a material having a resistivity, ρ in the range of 10^2 to 10^5 Ω.cm.

According to a second aspect of the present invention, there is provided an organic light-emissive device comprising a light-emissive organic region interposed between first and second electrodes for injecting charge carriers into the light-emissive organic region, at least one of said first and second electrodes comprising a plurality of layers including a high-resistance first electrode layer adjacent the surface of the light-emissive organic region remote from the other of the first and second electrodes, said first electrode layer formed over substantially the entire area of the surface of the light-emissive organic region remote from the other of the first and second electrodes, and having a thickness greater than the light-emissive organic region whereby adverse effects of any defects in the light-emissive organic region are compensated for by the first electrode layer; and a second electrode layer adjacent the surface of the first electrode layer remote from the light-emissive organic region, said second electrode layer comprising a patterned conductive layer.

In this second aspect of the present invention, the thickness of the first electrode layer is preferably in the range of 0.5 to 1 micron; and the first electrode layer preferably comprises a material selected from the group consisting of a semiconductor material, a mixture of a semiconductor material and an insulator, a mixture of a semiconductor material and a conductor material and a mixture of an insulator material and a conductor material.

According to a third aspect of the present invention, there is provided a method of forming an electrode of an organic light-emissive device comprising a light-emissive organic region interposed between first and second electrodes for injecting charge carriers into the light-emissive organic region, the method comprising forming one of the first and second electrodes by first forming a high-resistance first electrode layer over substantially the entire area of the surface of the light-emissive organic region remote from the other of the first and second electrodes, said first electrode layer comprising a material selected from the group consisting of a semiconductor material, a mixture of a semiconductor material with an insulator, a mixture of a semiconductor material with a conductor material and a mixture of an insulator material with a conductor material; and then forming a second electrode layer on the surface of said first electrode layer remote from the

light-emissive organic region, said second electrode layer comprising a patterned conductive layer.

According to a fourth aspect of the present invention, there is provided an organic light-emissive device comprising a light-emissive organic region interposed between first and second electrodes for injecting charge carriers into the light-emissive organic region, at least one of said first and second electrodes comprising:

a first electrode layer comprising an insulator material adjacent the surface of the light-emissive organic region remote from the other of the first and second electrodes;

a high-resistance second electrode layer adjacent the surface of the first electrode layer remote from the light-emissive organic region; and

a patterned conductive third electrode layer adjacent the surface of said second electrode layer remote from the first electrode layer; wherein

said first and second electrode layers cover substantially the entire area of the surface of the light-emissive organic region remote from the other of the first and second electrodes; and

said second electrode layer comprises a high-resistance material selected from the group consisting of a semiconductor material, a mixture of a semiconductor material with an insulator material, a mixture of a semiconductor material with a conductor material and a mixture of an insulator material with a conductor material.

In this fourth aspect of the present invention, the term "patterned electrode layer" refers to a plurality of electrode elements which are only connected to each other via the underlying electrode layers, and are preferably only connected to each other via the underlying high resistance second electrode layer.

The provision of a thin layer of an insulator material adjacent to the organic light-emissive region as well as an overlying high-resistance electrode layer has the following additional advantage. The charge carrier injecting performance can be further enhanced at the interface between the electrode and the light-emissive organic region by using a material containing a low work function element in the

case of a cathode or a material containing a high work function element in the case of an anode without significantly increasing the operating voltage of the device and detracting from the function of the first and second electrode layers as a whole which is to prevent lateral current leakage (cross-talk) as well as protecting the underlying organic region.

In this fourth aspect of the present invention, the first electrode layer preferably comprises a layer of a dielectric oxide, nitride or halide such as a fluoride. Particularly preferred materials for use in the case of cathodes are LiO, LiF and CsF.

In each of the above-described four aspects of the present invention, the light-emissive organic region may, for example, be composed of a single layer of a light-emissive organic material such as a light-emissive polymer, or it may include one or more additional organic layers which may function as additional light-emissive layers or as charge injection and/or transport layers.

Embodiments of the present invention are hereunder described in detail, by way of example only, with reference to the accompanying drawings in which:-
Figure 1 is a cross-sectional view of a device according to a first embodiment of the present invention; and
Figure 2 is a cross-sectional view of a device according to a second embodiment of the present invention.

A first embodiment of the light-emissive organic device according to the present invention is shown in Figure 1. In this embodiment, a glass substrate 2 of thickness 1.1mm is coated with indium tin oxide (ITO) 4 , which has a sheet resistance of 15 Ohms/sq., to a thickness of 150nm. This coating 4 of ITO is patterned to form a series of parallel rows using standard photolithographic and etch processes. A layer 6 of polyethylenedioxythiophene doped with polystyrene sulphonic acid (PEDT/PSS) is then formed on the ITO/glass substrate by spin-coating and baked at 150°C to remove water leaving a layer 6 having a thickness of 50nm. A layer 8 of light-emissive polymer is then deposited onto the layer 6 of PEDT/PSS also by spin coating. This layer could be a layer of a blend of 5% of

poly(2,7-(9,9-di-n-octylfluorene)-3,6-(benzothiadiazole) and 95% of poly(2,7-(9,9-di-n-octylfluorene) (5BTF8) doped with poly(2,7-(9,9-di-n-octylfluorene-(1,4-phenylene-((1,4-phenylene-((4-secbutylphenyl)imino)-1,4-phenylene)) (TFB) and has a thickness of 75nm. A layer 10 of a LiF/Al blend is then deposited on to the layer 8 of light-emissive polymer by the co-evaporation of LiF with Al in a vacuum chamber to form an ohmic contact on the light-emissive polymer layer 8. The LiF/Al blend layer 10 is deposited to a thickness sufficient to cover any defects on the surface of the light-emissive polymer layer 8. In the case that the device is prepared in a class 100 clean room, the thickness would be between 0.5 and 1 micron. An aluminium layer 12 is then deposited over the layer 10 of LiF/Al to a thickness of 0.5 microns, and is patterned using conventional photolithographic techniques to form a series of regularly spaced parallel columns running in a direction orthogonal to the series of parallel rows of ITO to thereby define a regular matrix of pixels where the series of ITO rows and Al columns spatially overlap with each other.

The LiF/Al physical blend is an isotropic conductor which conducts via a percolation mechanism wherein the resistivity of the blend is determined by the relative proportion of Al in the LiF/Al blend. The relative proportions of LiF and Al in the LiF/Al blend layer are determined according to the desired resistivity of the layer. The desired resistivity will of course vary according to the required thickness of the layer but is basically determined to provide a layer which is not so high in resistance that it leads to a significant increase in the drive voltage (since this will reduce the power efficiency of the device) but is high enough in resistance to ensure that crosstalk between adjacent columns is reduced to an insignificant level. The desired resistivity will therefore depend on several factors such as the number and spacing of the aluminium columns (which will depend on the desired resolution), the voltage at which each column is sequentially driven relative to adjacent columns, and the current density at which the device is to be operated.

Although a standard back-light LED is operated at a relative low current density of typically 1mA/cm^2, the operating current density of a dot-matrix display LED will often be higher because , for example in a passive matrix device, the rows are driven sequentially. Typically, the higher current density will correspond to the

unpulsed current density (the current density at which the device would be operated if it were to be used as a back-light device) multiplied by the number of rows which are sequentially driven. Therefore, a device having 100 rows will typically be operated at a current density of $100mA/cm^2$.

If the layer were to have a thickness of 0.5 microns, the resistivity of the LiF/Al blend could be up to 2×10^4 Ohm.cm without leading to an increase in drive voltage of greater than 0.1V, and if an increase in drive voltage of up to 1V were to be acceptable, the resistivity of the LiF/Al blend could be up to 2×10^5 Ohm.cm. If a layer having a thickness of 0.5 microns and a resistivity of 2×10^5 Ohm.cm were employed in a device in which the overlying aluminium layer and ITO anode layer were respectively patterned to form columns and rows each having a pitch of 1mm, a spacing of 0.5mm and a length of 50mm, then the leakage current to the adjacent columns on either side of the driven column is only 0.5μA (based on the supposition that the driven column is at 10V and the adjacent columns on either side of the driven column are earthed) compared to the current though the device of 250μA when only a single pixel is lit.

The embodiment described above also has the advantage that the high-resistance layer between the aluminium layer and the light-emissive organic layer comprises a material, LiF, which contains a low work function element and thus aids the injection of electrons into the light-emissive polymer, thereby improving the performance of the device.

A second embodiment of the organic light-emissive device according to the present invention is shown in Figure 2. The device shown in Figure 2 is identical to that shown in Figure 1 with respect to the substrate, anode and organic layers, and identical reference numerals are used to denote identical components. The device shown in Figure 2 differs from the device shown in Figure 1 with respect to the construction of the cathode. The cathode comprises a layer 14 of lithium fluoride having a thickness of about 5nm. This layer 14 can be deposited by any conventional deposition technique but is preferably deposited by an evaporation technique to minimize the damage to the underlying organic layer. On top of this

thin layer 14 of lithium fluoride is deposited a layer 16 of a semiconductor material such as a layer of a physical blend of lithium fluoride and aluminium to a thickness in the range of 0.5 to 1 micron. Next, a layer 12 of aluminium is deposited to a thickness of 0.5 microns on top of the layer 16 of lithium fluoride/aluminium blend to form an ohmic contact. This layer 12 of aluminium is then patterned using conventional patterning techniques to form a series of parallel columns running in a direction orthogonal to the series of anode rows. The relatively thick layer 16 of lithium fluoride/aluminium blend ensures the underlying organic layer is adequately protected from the patterning processes. The resistance of the aluminium/lithium fluoride blend layer 16 is such that it does not raise the operating voltage of the device by an intolerable degree whilst still preventing lateral current leakage (cross-talk) between adjacent cathode columns. The provision of a thin layer 14 of lithium fluoride adjacent the light-emissive organic region enhances the injection of electrons from the cathode into the light-emissive organic region.

Although the present invention has been described in detail above with respect to its application to a cathode for an OLED, it is equally applicable to an anode for an OLED in the case than an OLED is produced by first forming a patterned cathode on a glass substrate, depositing one or more layers of organic material on the cathode, and finally forming an anode on the uppermost layer of organic material. In the case of an anode, it is preferred that the electrode layer adjacent the light-emissive organic region comprises at least one element having a high work function to enhance the injection of positive charge carriers (holes) into the light-emissive organic region from the anode.

CLAIMS

1. An organic light-emissive device comprising a light-emissive organic region interposed between first and second electrodes for injecting charge carriers into the light-emissive organic region, at least one of said first and second electrodes comprising:

a high-resistance first electrode layer adjacent the surface of the light-emissive organic region remote from the other of the first and second electrodes, said first electrode layer covering substantially the entire area of the surface of the light-emissive organic region remote from the other of the first and second electrodes and comprising a high-resistance material selected from the group consisting of a mixture of a semiconductor material with an insulator material, a mixture of a semiconductor material with a conductor material and a mixture of an insulator material with a conductor material; and

a patterned conductive second electrode layer adjacent the surface of the first electrode layer remote from the light-emissive organic region.

2. An organic light-emissive device according to claim 1 wherein the first electrode layer comprises at least one material containing an element having a low work function.

3. An organic light-emissive device according to claim 2 wherein the element having a low work function is calcium or lithium.

4. An organic light-emissive device according to any preceding claim wherein the semiconductor material is selected from the group consisting of Ge, Si, α-Sn, Se, ZnSe, ZnS, GaAs, GaP, CdS, CdSe, MnS, MnSe, PbS, ZnO, SnO, TiO, TiO_2, MnO_2 and SiC.

5. An organic light-emissive device according to any preceding claim wherein the insulator material is selected from the group consisting of an oxide, a nitride and a fluoride.

6. An organic light-emissive device according to claim 5 wherein the insulator material is selected from the group consisting of Al_2O_3, SiO_2, LiO, AlN, SiN, LiF and CsF.

7. An organic light-emissive device according to any preceding claim wherein the conductor material is a metal.

8. An organic light-emissive device according to claim 7 wherein the conductor material is selected from the group consisting of Al and Ag.

9. An organic light-emissive device according to any preceding claim wherein the first electrode layer is comprised of a mixture selected from the group consisting of LiF/Al, Ca/Ge, Li/Si, Ca/ZnO, LiF/ZnSe and CsF/ZnS.

10. An organic light-emissive device according to any preceding claim wherein the thickness of the first electrode layer is in the range of 0.5 to 1.0 microns.

11. An organic light-emissive device according to claim 1 wherein the first electrode layer comprises at least one element having a work function greater than 4.5eV.

12. An organic light-emissive device according to claim 11 wherein the first electrode layer comprises at least one material selected from the group consisting of Au, Pd, Pt and ITO.

13. An organic light-emissive device comprising a light-emissive organic region interposed between first and second electrodes for injecting charge carriers into the light-emissive organic region, at least one of said first and second electrodes comprising:

a high-resistance first electrode layer adjacent the surface of the light-emissive organic region remote from the other of the first and second electrodes, said first electrode layer formed over substantially the entire area of the surface of the light-emissive organic region remote from the other of the first and second electrodes, and having a thickness greater than the light-emissive organic region

whereby adverse effects of any defects in the light-emissive organic region are compensated for by the first electrode layer; and

a patterned conductive second electrode layer adjacent the surface of the first electrode layer remote from the light-emissive organic region.

14. An organic light-emissive device according to claim 13 wherein the thickness of the first electrode layer is in the range of 0.5 to 1 micron.

15. An organic light-emissive device according to claim 13 or claim 14 wherein the first electrode layer comprises a material selected from the group consisting of a semiconductor material, a mixture of a semiconductor material and an insulator, a mixture of a semiconductor material and a conductor material and a mixture of an insulator material and a conductor material.

16. A method of forming an electrode of an organic light-emissive device comprising a light-emissive organic region interposed between first and second electrodes for injecting charge carriers into the light-emissive organic region, the method comprising forming one of the first and second electrodes by the steps of:

first forming a high-resistance first electrode layer over substantially the entire area of the surface of the light-emissive organic region remote from the other of the first and second electrodes, said first electrode layer comprising a material selected from the group consisting of a semiconductor material, a mixture of a semiconductor material with an insulator, a mixture of a semiconductor material with a conductor material and a mixture of an insulator material with a conductor material; and

then forming a patterned conductive second electrode layer over the surface of said first electrode layer remote from the light-emissive organic region.

17. An organic light-emissive device comprising a light-emissive organic region interposed between first and second electrodes for injecting charge carriers into the light-emissive organic region, at least one of said first and second electrodes comprising:

a first electrode layer comprising an insulator material adjacent the surface of the light-emissive organic region remote from the other of the first and second electrodes;

a high-resistance second electrode layer adjacent the surface of the first electrode layer remote from the light-emissive organic region; and

a patterned conductive third electrode layer adjacent the surface of said second electrode layer remote from the first electrode layer; wherein

said first and second electrode layers cover substantially the entire area of the surface of the light-emissive organic region remote from the other of the first and second electrodes; and

said second electrode layer comprises a high-resistance material selected from the group consisting of a semiconductor material, a mixture of a semiconductor material with an insulator material, a mixture of a semiconductor material with a conductor material and a mixture of an insulator material with a conductor material.

18. An organic light-emissive device according to claim 17 wherein the first electrode layer comprises a layer of a dielectric material.

19. An organic light-emissive device according to claim 17 or claim 18 wherein the first electrode layer comprises a dielectric material containing a low work function element.

20. An organic light-emissive device according to claim 19 wherein the first electrode layer comprises a layer of at least one dielectric material selected from the group consisting of LiO, CsF and LiF.

21. An organic light-emissive device according to any of claims 17 to 20 wherein the semiconductor material is selected from the group consisting of Ge, Si, α-Sn, Se, ZnSe, ZnS, GaAs, GaP, CdS, CdSe, MnS, MnSe, PbS, ZnO, SnO, TiO, TiO_2, MnO_2 and SiC.

22. An organic light-emissive device according to any of claims 17 to 21 wherein the insulator material of the second electrode layer is selected from the group consisting of an oxide, a nitride and a fluoride.

23. An organic light-emissive device according to claim 22 wherein the insulator material of the second electrode layer is selected from the group consisting of Al_2O_3, SiO_2, LiO, AlN, SiN, LiF and CsF.

24. An organic light-emissive device according to any of claims 17 to 23 wherein the conductor material is a metal.

25. An organic light-emissive device according to claim 24 wherein the conductor material is selected from the group consisting of Al and Ag.

26. An organic light-emissive device according to any of claims 17 to 25 wherein the thickness of the second electrode layer is in the range of 0.5 to 1.0 microns.

27. An organic light-emissive device according to any of claims 17 to 26 wherein the thickness of the first electrode layer is less than 10nm.

28. An organic light-emissive device according to claim 27 wherein the thickness of the first electrode layer is less than 5nm.

29. An organic light-emissive device substantially as described hereinbefore with reference to Figure 1 or Figure 2 of the accompanying drawings.

30. A method of forming an electrode for an organic light-emissive device substantially as described hereinbefore with reference to Figure 1 or Figure 2 of the accompanying drawings.

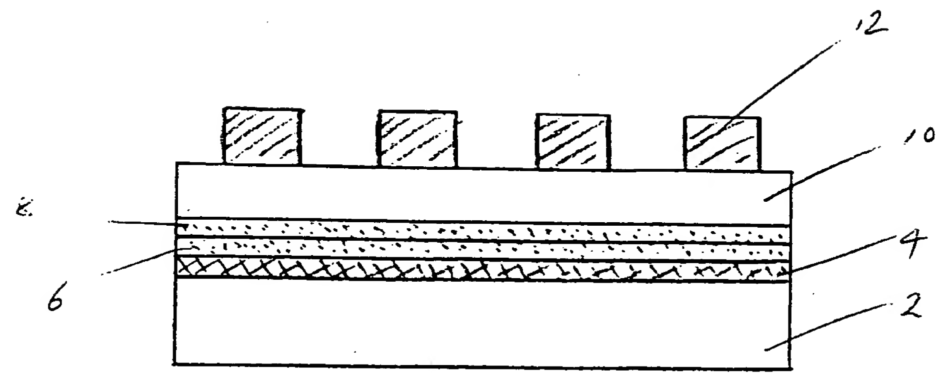

FIGURE 1

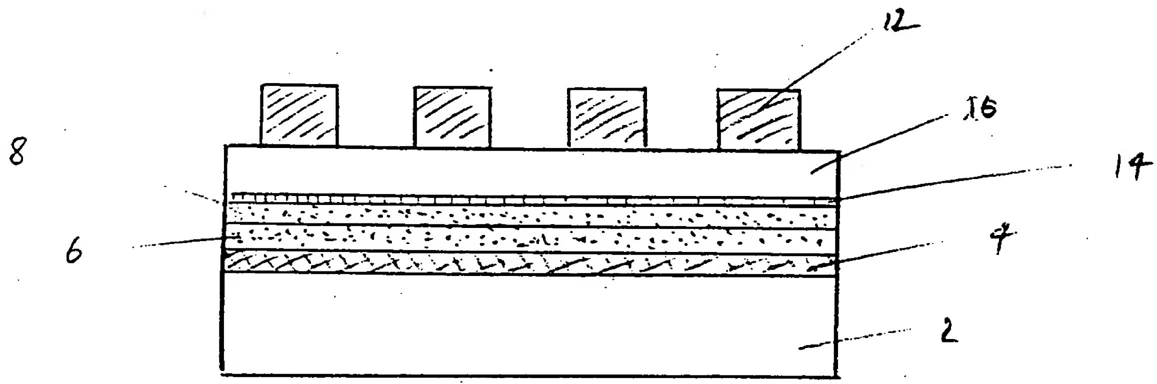

FIGURE 2